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ROCKS AND MINERALS

A Magazine for Mineralogists, Geologists and Collectors

Official Journal of the Rocks and Minerals Association

May, 1941

Vol. 16, No. 5 **Twenty-Five Cents** **Whole No. 118**

THE ROCKS AND MINERALS ASSOCIATION

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Organized in 1928 for the increase and dissemination of mineralogic knowledge

To stimulate public interest in geology and mineralogy and to endeavor to have courses in these subjects introduced in the curricula of the public school systems; to revive a general interest in minerals and mineral collecting; to instruct beginners as to how a collection can be made and cared for; to keep an accurate and permanent record of all mineral localities and minerals found there and to print same for distribution; to encourage the search for new minerals that have not yet been discovered; and to endeavor to secure the practical conservation of mineral localities and unusual rock formations.

Ever since its foundation in 1928, the Rocks and Minerals Association has done much to promote the interest in mineralogy. It has sponsored outings, expeditions, formations of mineralogical clubs and the printing of many articles that have been a distinct contribution to mineralogy.

Those of our readers who are members of the Association can rightly feel that they too were sponsors of these many achievements that have helped to give mineralogy a national recognition. Among your frineds there must be many who would like to have a part in the Association's work—to share with you the personal satisfaction, the pleasure, and the benefits of membership. Will you give your friends this opportunity to join the Association by nominating them for membership?

Each new member helps to extend the Association's activities—helps to make your magazine larger, better, and more interesting, and above all assists in the dissemination of mineralogical knowledge.

Some advantages of membershpe: All members in good standing receive:

(1) **Rocks and Minerals**, a monthly magazine. (2) A member's identification card that secures the privileges of many mines, quarries, clubs, societies, museums, libraries. (3) The right to participate in outings and meetings arranged by the Association. (4) The right to display a certificate of membership and to place after their names a designation indicating their membership or to advertise membership on stationery, etc. (5) The distinction and the endorsement which comes from membership in the world's largest mineralogical society.

Mineralogical clubs which subscribe for **Rocks and Minerals** also become affiliated members of the Rocks and Mineral Association and enjoy all the advantages which such an affiliation affords.

A number of clubs hold membership in the Association, participate in the annual outings, and co-operate in many ways in furthering the aims and ambitions of the Association.

Affiliation with the world's largest mineralogical society cannot fail to increase membership, enlarge circles of acquaintanceship, and stimulate a keener interest in mineralogy.

A list of affiliated clubs will be found among the back pages of the magazine.

Rocks and Minerals

PUBLISHED MONTHLY

Edited and Published by PETER ZODAC

May 1941

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ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The Official Journal of the Rocks and Minerals Association

Chips From The Quarry

A TRIBUTE TO THE MINERAL DEALER

We do not as a rule reprint items from other publications but this month we are deviating from our policy. *The Mineral Dealer,* which appeared in the February, 1941, issue of W. Scott Lewis' MINERAL BULLETIN is so timely, to the point, and interestingly presented that it deserves wide publicity. We have long stressed the value of good specimens in collections and have pointed out in past editorials that the easiest, cheapest and most satisfactory method for obtaining such specimens is to buy them from realiable dealers.

As pointed out by Mr. Lewis, the established mineral dealer has contacts all over the country and in many foreign lands. The dealer buys specimens in such large quantities that he can afford to throw away poor material to sell only the best and still at a low price, all things considered.

The established mineral dealer is the most important cog in the cycle of mineral collecting of which there are four. The first is the miner or prospector who finds the specimens in the field and who sells them to the dealer; next is the dealer who not only buys the specimens thus found—which often come from the most out of the way spots of the world—but he has to sell them as well; third is the mineral magazine in which the dealer advertises his stock; the fourth and last cog is the mineral collector who reading the advertisement buys the specimens offered by the dealer.

During the past few years quite a number of very good collections have been made by many members of the Rocks and Minerals Association. We have examined some of these collections and were greatly pleased not only with the quality of the specimens but with the manner in which they were displayed. A number of these collections belonged to youngsters and it was amazing to see what care and attention the specimens were receiving from their owners. It was not necessary to inquire how the specimens were obtained—dealers' labels were so prominently displayed that fully 90% of the specimens had been purchased.

According to a number of the collectors, the advertising pages of ROCKS AND MINERALS were the most interesting to them—they not only read every ad but some of them have purchased specimens from every dealer advertising therein.

We acknowledge the great service the dealer is doing for both ROCKS AND MINERALS and the mineral collector. Without the aid of the dealer, mineral collecting would be at a standstill, if not actually falling backwards, and ROCKS AND MINERALS might go out of existance.

Peter Zodac

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The Official Journal of the ROCKS and MINERALS ASSOCIATION

Whole No. 118

THE GEOLOGY OF THE LINCOLN TUNNEL PART 2

By THOMAS W. FLUHR

Geologic Features of the Weehawken Plaza Area

The main ridge of the Palisades and Kings Bluff rises abruptly from the level of the Hudson River. The western approach comes in at the high level of the main ridge and the tunnels beneath the river lie at considerable depth. The problem presenting itself was that of bringing the approach from the high level of the ridge to the low level of the under-water tunnels without excessively steep grades. The final solution of this problem was that of making use of a loop.

The approach highway in the rock cut on top of the main Palisade ridge approaches the small valley lying between the main ridge and Kings Bluff. At the western edge of the valley is Park Avenue, while Hudson County Boulevard East occupies the east side of the valley. It was necessary to connect both these main highways with the tunnels.

Where the line of the approach highway coming east over the Palisades reached the eastern declivity of the main ridge a comp'ex series of ramps were planned connecting the approach with the highways. A bridge was built spanning Park Avenue and another crossing Hudson County Boulevard East. This latter bridge carries the approach to the western edge of Kings Bluff where it continues on a cut-and-fill embankment to the southern end of the bluff, where there is a sharp declivity. An elevated viaduct was built to bring the approach down to the level of the ground in the valley, with another bridge crossing Hudson County Boulevard East, which was relocated. The approach then enters a wide plaza, at the north end of which are the portals of the tunnels leading beneath the river to Manhattan.

As has already been stated, the valley between the main ridge of the Palisades and Kings Bluff is a fault valley. The diabase is a thick sill which has been intruded in to the Triassic shales and sandstones. In this area the shales and sandstones formerly overlying the diabase sill have been stripped off by erosion exposing at the surface the sill of diabase with the shales and sandstones beneath.

Fault displacement has taken place along a roughly north-south line. The diabase and sediments which make up the Kings Bluff block were at some former time continuous with and part of the main ridge, but the Kings Bluff block has been dropped downward in reference to the main ridge. At the site of the tunnel crossing this displacement amounts to approximately 300 feet. The fault movement in addition to dropping down the Kings Bluff block caused fracture and breaking of the rock along the the line of displacement, thus making it easy for surface streams to cut down into the broken rock and form a valley. The low elevation of this valley made it very useful as a suitable site for the tunnel plaza, but the broken character of the bedrock introduced many problems in construction.

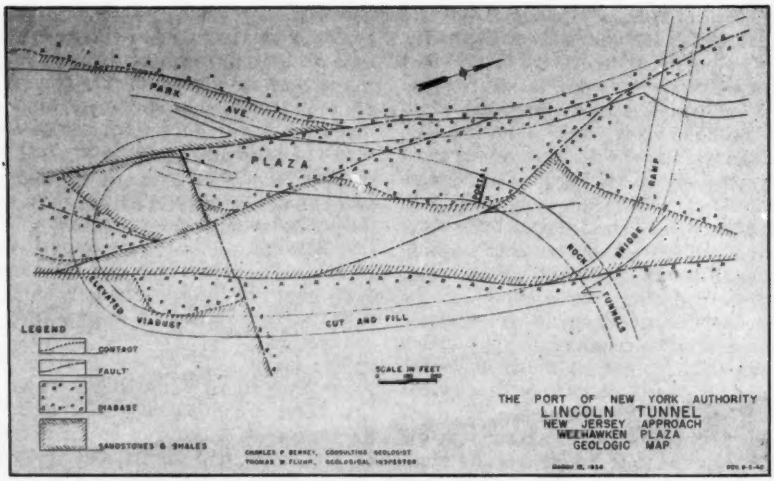
The major fault of the area lies immediately west of Kings Bluff. In addition there are numerous branches from the main fault which split up the bedrock of the valley into slivers and splinters. There are also cross faults which broke each of these splinters into several frag-

ments. There is hardly any other place in the metropolitan area which has been so splintered and split by faulting as this. Since the diabase overlies the shales and sandstones which dip west at 15 degrees the effect of faulting was to leave a series of slabs of diabase underlain by shales and sandstones. In addition to the main sill there are thin stringers or minor sills in the shales and sandstones below the main sill, and the presence of these added to the complexity of the geologic structure, making it difficult to unravel. Glacial deposists and artificial fill covered most of the area in the valley and it was necessary to make borings to determine the elevation of the rock floor and the rock structure. The latter proved to be so complex that it was unraveled only by construction of a model, in which varicolored pegs represented the formations encountered by the borings.

In addition to mapping of the rock outcrops a very large number of exploratory borings were made at various times, and the information secured from these sources was plotted on maps. Excavation later gave opportunity to check on the accuracy of the maps. Near the tunnel portal for example, a fault was represented on one of the earlier maps as having a curved course. On excavating through this section two faults were found intersecting each other at an acute angle. A fault was drawn along Baldwin Ave. without definite information and based largely on inference and opinion, but when a sewer excavation was made at this place the fault was found to be present within a few feet of its predicted location.

The Weehawken Ramp and Kings Bluff Embankment

Naturally, since there were so many faults in the area, much of the bedrock was jointed, weathered and of poor quality for construction purposes. One of the places where trouble was encountered from this source was at the ramp structure between Pleasant Ave. and Hudson County Boulevard East. Much of the bedrock was uncovered in this area. Deep rock cuts were made in some places and in others footings for the structure rest on the bedrock, and these gave rise to many problems. Joints, shear zones, and fault displacements were numerous. Some of this jointing was produced by stresses set up during cooling and consolidation of the diabase sill. Other joints, more regular in mode of occurrence, as well as numerous shear zones, were produced by later movement. These displacements took place at the time



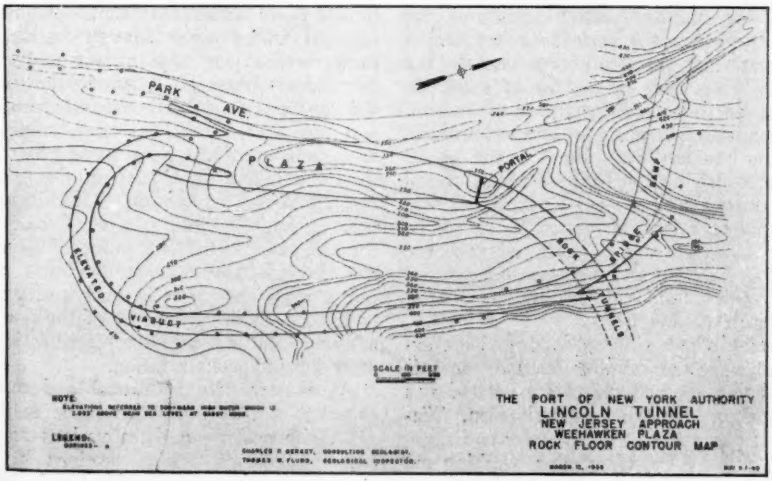
Weehawken Plaza Geologic Map

when movement occurred along the major fault axis.

In the excavations at this place overbreakage of the rock occurred as the result of jointing and shearing, and the rock cuts frequently could not be kept to the desired net lines. Moreover surface weathering caused decomposition and softening of the rock along the joint planes and shear zones. This gave trouble when footings for support of the structure were so located as to be placed on these weakened zones. Fortunately such decay did not penetrate to great depth. Because of this it was possible to improve conditions by excavating some of the footing sites to greater depths than the footings were increased in area.

One place in particular where trouble was encountered was at the site of the east pier of the bridge which carried the approach from the ramp over Hudson County Boulevard East to the west side of Kings Bluff. The major fault of the area, on the west side of Kings Bluff, had been located accurately by means of test borings. Unfortunately the most advantageous place for this bridge pier was directly on the fault line. In spite of the fact that the location of the fault was well-known it still appeared advisable from the standpoint of design to retain the proposed location. Excavation was begun and it was found that the bridge pier site had been located with mathematical exactness on the crush zone of the fault. The excavation was carried down some 15 feet into the decayed and disintegrated rock, which was of the consistency of sand and gravel. Increasing the area of the footing thus greatly reducing the unit loading proved a satisfactory solution to the problem.

From the ramp and bridge over Hudson County Boulevard East the approach continues on a cut-and-fill embankment on the west side of Kings Bluff. The rock is the Palisades diabase and is exposed for a considerable distance on the east side of the roadway. On the west side of Kings Bluff were several high retaining walls of rubble masonry which came quite close to the line of excavation. A short distance to the west of the cut is one of the major faults of the area. In the diabase of Kings Bluff and parallel to this major fault are frequent joints and sheeted zones which run generally north and south and dip 70-80 degrees to the east. The joint structures thus dipped eastward under the walls so that the ledges tended to overhang when excavation removed the adjacent rock on the west side. In addition there are cross



Weehawken Plaza Rock Floor Contours.

joints and irregular discontinuous joints dipping to the west at angles of 15 to 40 degrees. These intersecting joints caused the diabase to break out in large irregular blocks which tended to slide out along the westward dipping joints, especially when these joints were steep and the toe of the block undercut. While the rock appeared sufficiently stable to support the walls for a considerable period of time, eventually as the effects of weathering became more pronounced there would be greater tendency for these blocks to slide out and undermine the walls. Moreover the jagged and jointed rock berm, while presenting an appearance of danger greater than actually existent, was an undesirable feature so close to a heavily traveled approach road. The walls were removed and the rock stepped back so as to remove the overhanging ledges and eliminate the appearance of instability.

The Elevated Viaduct Section

The approach on reaching the south end of Kings Bluff enters onto an elevated viaduct. This structure was supported on piers and columns which were carried down to the bedrock. Immediately south of Kings Bluff in the vicinity of the Electric Ferry approach and Baldwin Ave. the rock floor is high. In this area part of the diabase was excavated and the footings placed directly on the rock. Where the rock floor lay deeper beneath the surface, excavations for the piers were made by the use of sheet piling which was driven down to bedrock around the periphery of the excavations. Many boulders were found in the glacial drift overlying the bedrock which caused the sheet piling to hang up so that it was found necessary in places to carry the excavation below the bottom edges of the piling. Little water was encountered and no trouble found in keeping the ground water level down.

Some of the column footings were excavated by the cylinder method. In this method a toothed cylinder is rotated and cuts down through the overburden. Water is pumped into the cylinder and flows out under the cutting edge, washing out the overburden. It was found however that the sand, clay and fine gravel were washed out by the water but that the boulders were too heavy to be washed out, and accumulated inside the cylinder. When the cylinder cutting edge approached the bedrock floor this accumulation of boulders inside the cylinder spread out beneath the cutting edge preventing further progress. In such cases it was necessary to muck out the cylinders by hand.

The rock at the site of this viaduct showed great variation in kind and quality. Diabase, shale, sandstone, baked shale, and baked shaly sandstones were found. The rock at the site of this viaduct is badly jointed and often sheared and crushed, and the shear and crush zones have been affected by weathering and decay, but this decay does not extend to great depth, and foundation conditions were materially improved by carrying excavations for the footings to greater depth than originally planned.

The Weehawken Plaza

The general location of the Weehawken Plaza of the tunnel was fixed by the topographic features. The first step in planning the plaza was to determine a suitable location for a portal from whence to begin the tunnels proper. A tentative site was selected and test borings made. The general geologic features were known but the test borings served to add much additional detail. One boring was drilled down through the major fault on the west side of Kings Bluff. Surprisingly enough it was found that the low point of the rock floor profile was not governed by the crush zone of and sandstones has been more effective than the major fault zone in determining the course of erosion. Most important of all, the borings showed that at the original site of the proposed portal the bedrock floor was so low that the portal would be partly in earth and partly in rock. Moving the site of the portal a short distance southwest placed it in a more advantageous position.

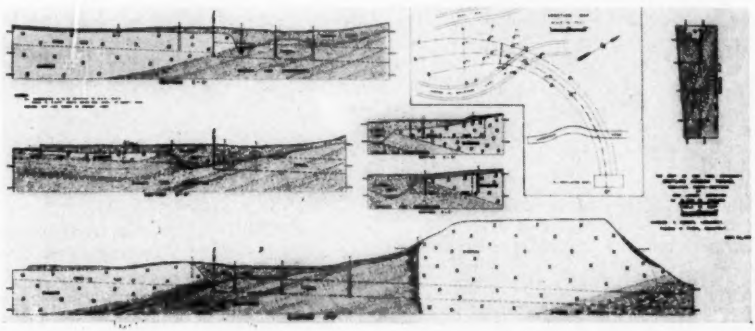
At a later date additional and more complete test borings were made at the plaza site and from them various maps and geologic structure sections were drawn. It was shown that the rock floor at the first proposed site of the portal

was low because of the presence of a fault and its associated crush zone; an additional reason for moving it to a more desirable location. The geologic structure sections and a rock floor contour map made it possible to estimate with a fair degree of accuracy the amounts of excavation in rock and in overburden.

The Weehawken plaza was excavated by open cut methods. One feature of interest developed on the west side of the plaza where a deep rock cut, later covered over, was made to connect the plaza with Park Avenue. This cut passed through a fault and crush zone. On the west side was the diabase of the main ridge, a thin fault sliver of diabase on the east, and the shales and sandstones which underly the main sill in between. In order to retain the overburden on the west side, on which Park Avenue rested, the contractor used sheet steel piling braced with cross beams on both sides of the excavation. The fault splinter of diabase on the east side of the cut was excessively jointed as the result of the faulting and had suffered from the effects of weathering. Almost no rock berm had been left beneath the bottom of the row of sheet piling supporting the eastern side of the cut, so that when the broken and jointed diabase began to fall out from below the sheet piling, the entire structure at that place collapsed and fell down into the rock cut, thus leaving the overburden under Park Avenue without lateral support. It was necessary to suspend traffic until support could be installed.

When the Weehawken plaza had been excavated a record was made of the geologic features. On the west side of the plaza a rock berm was left exposed for the architectural effect. This rock berm is badly jointed diabase and the joints make the rock very blocky. Calcite and other soft minerals were present in some of the joints. After this rock berm had been exposed for some time the effects of weathering on the exposed rock became apparent, for a considerable quantity of rock spalled off. The effects of the weathering were found to be especially effective on the joints and shear zones. In order to minimize the disintegrating influence of weathering agencies on the rock the upper surface of the berm was waterproofed so as to prevent the access of water, and drainage permitted at the base of the berm.

The portal and open-cut section of the tunnels was in the shales and sandstones. The exploratory borings showed the presence of a sharp depression in the rock floor at this place. It was due to erosion along a zone of rock weakened by shearing connected with the general deformation. The actual displacement along each crush zone appears to have been small, in most cases the vertical displacement being only a foot or so. The crush zones dip about 70 degrees to the southwest. Although these zones are plainly marked at the top of rock due chiefly to weathering, they narrow rapidly with depth. In the preliminary plans the portal was originally situated farther to the north and



Kings Bluff Cross-section

close to these faults, but was moved to its final location to avoid the depression in the rock floor. On the earlier geologic maps a single curved fault was drawn at this place but on excavation it was found that there were two faults intersecting at an acute angle, one of which was branched.

(To be continued)

NEW EXAMINATION FOR ENGINEERS ANNOUNCED BY CIVIL SERVICE COMMISSION

A new drive for Engineers was begun by the Civil Service Commission on April 7, with the announcing of an Engineer examination which includes all branches of engineering except chemical, metallurgical, marine, and naval architecture which are covered by previously announced examinations.

The new Engineer examination cancels and supersedes the following examinations announced in 1940: Mechanical (No. 61); Aeronautical (No. 64); Senior Engineer (No. 83); Senior Civil Engineer (No. 98). However, persons who have been rated eligible under these four examinations will have continued eligibility.

Applicants must have completed a 4-year recognized college course except that provision is made for the complete substitution of qualifying professional engineering experience of the proper quantity, type, and quality, for the education lacking. Additional professional engineering experience, differing in kind, length, degree of progression, and responsibility, according to the grade and branch of the position applied for is also required except that graduate study in engineering may be substituted for part of the experience. The maximum age limit is sixty years.

Engineers qualified in the following specialized fields are particularly needed for the National Defense program and are urged to file their applications at once: Aeronautical, Agricultural (Farm Machinery), Construction (Airports and Buildings), Heating and Ventilating, Mechanical (Industrial Production and Diesel Design), Ordnance, Radio, Safety, Sanitary (especially Public Health), Structural (Building Design), and Welding.

The duties of these positions will incude design, construction, and research in the various branches of engineering. The positions pay from $2,600 to $5,600 a year. Applications will be rated as they are received at the Commission's Washington Office until June 30, 1942.

Further information and application forms may be obtained at any first- or second-class post office or from the Civil Service Commission, Washington, D. C.

New Fossil Lizard from the Upper Cretaceous of Utah, by Charles W. Gilmore.

In 1937, a Smithsonian Paleontological Expedition to central Utah, under the direction of Dr. Gilmore, was fortunate in finding a locality (South Dragon, Manti National Forest, Emery County) rich in well-preserved remains of a new and unique member of the lizard family. Although these specimens are among the most ancient of the lizard family known from North America, they have the further distinction of being more completely preserved than any member of this suborder yet discovered on this continent.

Issued as Publication 3602 (3 pp., 2 figs.) by the Smithsonian Institution, Washington. D. C.

LOS ANGELES (CALIF.) LAPIDARY SOCIETY EXHIBITION

By CLARK HARRISON

On March 22-23, 1941, the Los Angeles Lapidary Society of Los Angeles, California, held its first annual exhibition in the spacious exhibit rooms of the Los Angeles Swimming Stadium building, Exposition Park 3980 Menlo Avenue. The playground department said that this attendance was the largest ever had at this building.

The weather was ideal, and the attendance reached 6000, some visitors coming from as far away as Minnesota. The exhibition was confined strictly to amateur art in the lapidary field—commercial dealers not being permitted to take any part. Many thousands of examples of cut and polished semi-precious gemstones of California and neighboring states were on display, as well as some imported material, cut and polished here. This was probably the greatest assembled display of lapidary art ever shown anywhere.

An enormous amount of floor space was utililed. There were 75 eight-foot tables covered with gorgeous specimens, as well as several upright cases. Several rough specimens of ores were also displayed. The 154 pound specimen from the Joplin District near Picher, Oklahoma, displayed by O. C. Smith of Long Beach, contained nice crystals of galena, chalcopyrite, calcite, sphalerite, marcasite, and dolomite, all growing in one common matrix. A dark room contained many excellant specimens of fluorescent and phosphorescent specimens. Colored movies were taken of the show, which was free and open to the public.

Clark Harrison, West Coast correspondent for Rocks and Minerals.

The beautiful Los Angeles Swimming Stadium Building—Scene of the greatest lapidary show ever held.

There were 74 exhibits, 15 of these belonging to lady lapidists, and 25 of the exhibits belonged to novices (with less than a year's experience). There were 12 competing classes; 41 ribbons were awarded; and a special prize was given to all first place winners. It required the judges four hours to make the awards. The judges were well known mineralogists of Southern California—Ernest W. Chapman of South Pasadena, Jess Abernathy of San Gabriel, and Kenneth Reed of Pasadena.

The following list of exhibitors gives an idea of who some of the leading lapidists of Los Angeles are: O. P. Avery, W. Alderson, James C. Arnold, W. C. Allen, L. M. Barrett, G. Haven Bishop, F. A. Bruner, R. L. Cass, Merle E. Charleston, C. E. Cramer, Agnes De La Barr, Frank H. Crawford, Mrs. F. H. Crawford, Charles A. Crosby, A. R. Cutter, T. L. Daniel, W. H. N. Freeman, R. S. Grube, J. E. Gaston, Louis Goss, Katherine Goss, DeWitte Hagar, Mrs. Jane Hagar, Albert Hake, Trester S. Harris, Dr. H. Marsden Heard, Mrs. H. Heard, Harold J. Hueckel, Mrs. H. J. Hueckel, A. E. Hoffman, Ralph Jones, Hugo M. Kulstad, L. E. Lackie, Jr., Mrs. L. E. Lackie Jr., Richard Lehman, Helyn Lehman, Jeane M. Lippitt, Harold H. Lippitt, J. H. McCornack, H. E. McKibben, A. J. Martin, Ben Maben, Charles D. Maples, Neff Maynard, Thelma Maynard, A. B. Meiklejohn, R. W. Mitchell, H. L. Monlux, Eugene Ports, Esther Ports, Lelande Quick, K. D. Rolf, Harold N. Root, Harry R. Ringwald, Dayle Rischel, Pearl Roberston, C. B. Rosenberg, Mrs. C. B. Rosenberg, Fred J. Rugg, Mrs. F. J. Rugg, Clifford Schrader, Theodore W. Schroeder, Charles G. Schweitzer, W. N. Shahan, O. C. Smith, Charles G. Smolt, E. L. Snowberger, Allen D. Tirrell, Lillian Tirrell, Milo Tupper, James F. Underwood, Bruce Van Vranken, Thomas S. Warren, R. B. Yale.

Lelande Quick, President of the Los Angeles Lapidary Society, inspects the display rooms in the Stadium Building.

The exhibition was a celebration of the society's first birthday. It is the only organization of its kind in the world. It was formed a year ago by 16 amateur gem cutters. Its membership of 130 members is composed largely of business and professional men and women whose mineralogy hobby developed into a desire to do something with the many fine specimens they gathered from desert, mountain, and seashore areas. Its officers are well known Southern California mineralogists: Lelande Quick, president; James C. Arnold and Raymond B.Yale, vice presidents; A. B. Meiklejohn, Secretary; Ernest L. Snowberger, treasurer; Harry R. Ringwald, chairman. Committee officers: R. L. Cass, J. H. McCornack, R. W. Mitchell, C. E. Cramer, Dr. J. R. Lester, Mrs. R. D. Hagar, Mrs. A. D. Tirrell, Merle E. Charleston.

Ernest Snowberger, treasurer of the society, who has only one arm and one leg, demonstrated how a one-arm lapidist can turn out fine and exacting work. Mr. Snowberger's life presents an interesting

A beautiful and unusual display of agates, jaspers, and other siliceous gemstones at the exhibition.

story. He is a department manager of the Southern California Edison Company of Los Angeles. He hails from the wide open spaces of Idaho. He lost his arm and leg via 60,000 volts of electricity. But that doesn't stump him. He is active in field trips, can drive his own car, collects all his own rock materials, and turns out the most beautiful cut-and polish work (though he has only one year of experience in this work). His work drew a special award.

Out of town visitors included Dr. Fox, El Centro; N. Hoffman, Fallbrook; Bill Hackbarth, Santa Paula; Chester Teaque, San Dimas; Frank Prehm, wife, and daughter, June, Altadena; Milo Potter, Long Beach; David E. Knopf, San Gabriel; E. Brown, Hemet; Sam Payson, El Centro; Mr. and Mrs. O. C. Woods, Long Beach; Mr. and Mrs. Harry Gee, San Dimas; Mr. and Mrs. McLain, Fallbrook; E. F. Peterson and family, Hemet; Mr. and Mrs. Howard, Hemet. Out of state visitors included: E. S. Anderson, Minnesota; John W. Greb (President, Gem Collectors Club and Director of Northwest Federation of Mineralogical Societies), Seattle, Washington; Dr. and Mrs. Frederic W. Burcky, Evanston, Illinois; E. P. Matteson, Phoenix, Arizona.

Plans are already under way to make next year's exhibition one of the largest, finest and most educational lapidary exhibition possible. This year's show was something that could not be forgotten very soon. The great variety, profuse colors,and exquisite handiwork was something to be marvelled at. There were thousands of cut and polished specimens of various sizes: agate, petrified wood, marble, jaspers, chalcedony, onyx, petrified palm wood, thunder eggs, geodes, howlite, etc., from Death Valley, etc. It rates as being one of the finest mineralogical and lapidary shows in recent times, and I look forward to next year's exhibition.

THE ANDREWS QUARRY NEAR PORTLAND, CONN.

By PETER ZODAC, Editor

ROCKS AND MINERALS

Connecticut is famous for its pegmatite quarries among which are the Strickland, Gillette, and Andrews. In the May, 1937, issue of *Rocks and Minerals,* the Strickland Quarry was featured (pp. 131-141); the Gillette Quarry was briefly described in the November 1937, issue (p. 333); and this paper covers the Andrews Quarry.

HISTORY

The Andrews quarry is an old working. It consists of two excavations of which the larger was opened up by Harry Andrews. After being idle for 22 years or more, it was reopened three years ago by the Eureka Mining and Milling Co. The other and older working was opened up by Harry Andrews' grandfather, who is now remembered as Grandfather Andrews. This quarry has been abandoned for many years. Due to the fact that the property belongs to Herbert Hale, it is also known as the Hale Quarry; and furthermore, because of its close proximity to the Glastonbury Township Line, it has also been called the Glastonbury Quarry.

In reporting on the quarries of the immediate vicinity, Foye[1] stated: "The only one which has produced rare minerals is the Hale or Andrews quarry, situated just south of a small stream at an elevation of 55 meters (180 feet) approximately. The quarry is no longer worked, but in its day it was one of the best in the region. Large, well formed monazite crystals (2 to 3 cm. in diameter) were found here, and are not known elsewhere in the district. Other minerals were molybdenite, sphalerite, rose quartz, zircon, columbite, massive green apatite, purple heterosite (secondary after triphylite), and uraninite. The uraninite analyzed by Hillebrand (Bull. U. S. Geol. Surv. No. 78, 43, 1891) in 1889 was from this quarry. It will be noted that the quarry is within the limits of the town of Portlan, not Glastonbury as stated in most references. A single blast about the year 1884 yielded 100 kilograms or more of columbite, the largest single yield from one pocket known in this vicinity. The entire mass was without crystalline planes."

The quarry referred to by Foye is the smaller one, near Hale Brook, that was opened up by Grandfather Andrews.

LOCATION

The Andrews Quarry lies on the west side of a small hill and can be seen from the main road (Conn. 15). The locality is in the extreme northern part of Middlesex County in the central part of the state, about ½ mile south of the Hartford County Line (also the Portland-Glastonbury Township Line), 1½ miles east of the Connecticut River and 4 miles northeast of Portland.

To reach the locality, the main route is Conn. 15. In going north from Middletown-Portland (twin cities on the Connecticut River), let 0.0 be the end of the bridge in Portland, Then

1.8 miles—Red stone monument in Portland. The road to right goes straight to Collins Hill on which is the Strickland Quarry.
2.3 miles—Gildersleeve Post Office, left.
3.4 miles—Keep left at cross-roads.
3.8 miles—Large sand bank on right.
5.5 miles—Turn right on dirt road (Andrews Quarry can be seen on right on hill.
5.9 miles—Turn right at the first gate.
6.0 miles—Grandfather Andrews quarry 50 feet right near Hale Brook.
6.2 miles—Andrews Quarry (main working).

In going south from East Hartford, let the junction of the New London Road in Glastonbury be 0.0 Then.

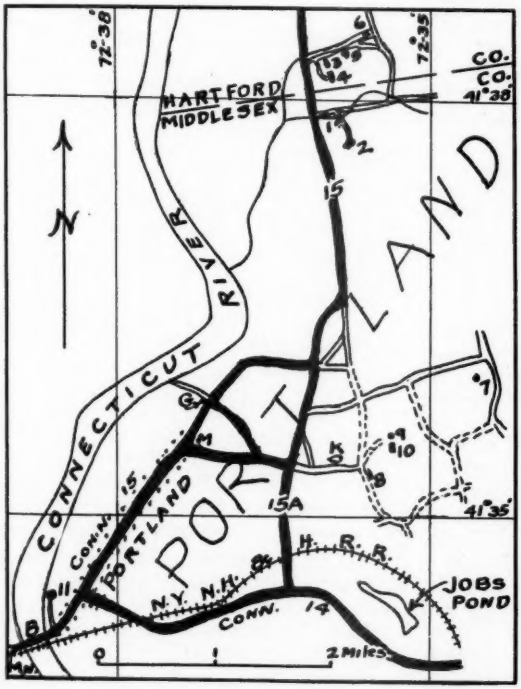
1 Foye, W. G., Mineral Localties in the Vicinity of Middletown, Conn. Am. Min., Jan. 1922, p. 6.

5.8 miles—Portland Town Line (sign on left). This is also the county line.
6.1 miles—Turn left on dirt road. Andrews quarry on right on hill.
6.5 miles—Turn right at first gate.
6.6 miles—Old quarry 50 feet right, near brook.
6.8 miles—Andrews Quarry (main working).

LAYOUT

As already stated, there are two main workings on the property. The smaller, opened up by Grandfather Andrews, is the first one, 50 feet west of the road, near Hale Brook. It is roughly 50 feet in diameter with walls 25 feet high. It is abandoned and so overgrown with bushes, etc., that it can easily be passed by without notice. This is the quarry that is noted for rare minerals and no doubt many of them can still be found.

The main quarry, on top the hill, is about 200 feet long, 100 feet wide, with vertical walls 50 fet high. The present operations have deepened and lengthened the quarry and the point where the old working left off and new one begun is plainly visible on the quarry walls; the new workings on the bottom are clean and fresh, the old ones above are weather-worn and dingy looking.



Map showing locations of quarries, etc., near Portland, Conn.

1—*Grandfather Andrews Quarry.*
2—*Andrews Quarry (main working).*
3—*Howe pegmatite quarry.*
4—*Howe pegmatite quarry (main working).*
5—*Howe pegmatite quarry (small working)*
6—*Howe pegmatite quarry (prospect).*
7—*Pelton pegmatite quarry.*
8—*Gneiss quarry (small working).*
9—*Schoonmaker Mine.*
10—*Strickland Quarry.*
11—*Red sandstone quarries.*

B—Bridge.
G—Gildersleeve P. O.
K—Kettle hole. Jobs Pond is also a large glacial kettle.
M—Red Stone Monument.
MN—Middletown in extreme lower left hand corner.

(Topography is from U. S. Geological Survey, Middletown, Conn., Quadrangle Topo. Map)

GEOLOGY[2]

The pegmatite is a huge dike enclosed by Glastonbury granite-gneiss, which makes a ridge that can be traced over 1,000 feet to the south and in many places is at least 150 feet wide with neither wall exposed. Bolton schist borders the Glastonbury granite-gneiss along its west end and the pegmatite dike is near the contact.

The pegmatite of the main quarry consists in part of graphic granite of varying coarseness and in part of irregular intergrowths of quartz and feldspar.

The pegmatite has been quarried at three openings, (1), the main operation on the north end of the ridge (Andrews Quarry proper); (2), on the east side (about 50 feet from the end of the main working) where a sharp contact may be seen between the Glastonbury orthogneiss and the pegmatite; and (3), on the west side (about 250 feet from the end of main quarry) where a very interesting banded aplite is found forming the western border of the pegmatite.

At the smaller quarry, near the brook (Grandfather Andrews Quarry), some excellent crystals of feldspar may be seen in the wall.

MINERALOGY

The minerals of the Andrews Quarry have received but little publicity and many collectors have been avoiding the locality. As a matter of fact the author has been informed by a number of collectors that the Andrews Quarry was not worth a visit. This seems rather strange because the quarry is a large working with extensive dumps. On August 5. 1940, Carl Klein, of Hudson, N. Y., visited the quarry and collected quite a number of very interesting cellular pyrite associated with massive chalcopyrite and pyrrhotite. The writer, himself, visited the locality for the first time on August, 11, 1940, accompanied by Ken Pugsley, of Pawling, N. Y., and L. W. Little, of East Hampton, Conn., at which time good specimens of autunite and torbernite were plentiful.

Among the specimens known from the locality (all those mentioned by Foye are from Grandfather Andrews Quarry) are:

Albite: Common as white cleavable masses. It has also been found altered so that it has a fine granular texture.

Allanite: Found as long acicular crystals in the pegmatite.[3]

Apatite: Massive, green. Mentioned by Foye as occurring at the small quarry near the brook. At the same quarry, Schairer[4] states apatite occurs in perfect pink, pale green or white crystals in cavities in the pegmatite.

Autunite: Common as pale greenish flakes on dark smoky quartz and which fluoresce a bright green under ultra-violet light.

Beryl: Two small crystals have been found by the writer, both were about 1 inch in length and in diameter; one was gray and the other very pale green.

Biotite: Occurs in very small black plates in pegmatite.

Chalcopyrite: Massive, associated with pyrite and pyrrhotite in smoky quartz. See pyrite.

Columbite: Mentioned by Foye as occurring at the small quarry.

Garnet: Common a small dark reddish crystals in pegmatite. Sometimes the garnet has entirely disappeared leaving in its place a small rounded pale brownish stain or zone. This altered garnet is especially common in the fine granular white albite. Some of the garnet crystals are so tiny and reddish (almost pinkish and plentiful) that the albite in which it is embedded appears to be reddish.

Heterosite: Purple and secondary after triphylite. Mentioned by Foye as occurring at the small quarry.

Limonite: Common as brown stains on pegmatite.

Melanterite: As a grayish efflorescence on pyrite.

2 *Crystallines of the Eastern Highlands,* by Drs. Peoples and Keppel. Weselyan University Publication. p. 2

3 Schairer, J. F. *The Minerals of Connecticut,* State Geological and Natural History Survey, Hartford, Conn., Bull. 51, 1931, p. 31

4 Schairer, J. F. Work cited p. 33

Microcline var.Amazonstone: Small pale green cleavable masses grading into white microcline.

Microcline: White, cleavable, and the principal feldspar of the quarry.

Molybdenite: Mentioned by Foye as occurring at the small quarry.

Monazite: Mentioned by Foye as occurring at the small quarry in crystals 2 to 3 cm. in diameter.

Montmorillonite: Common as brownish encrustations on pegmatite.

Muscovite: Common as small whitish flakes in pegmatite.

Muscovite var.Sericite: Seen in a few cases as small pearly flakes in pegmatite.

Pyrite: On Monday, August 5, 1940, Carl Klein, of Hudson, N. Y., found quite a number of large, lustrous cellular masses of pyrite, some of which were iridescent. Examination of a number of the specimens disclosed the fact that globules of pyrrhotite were present in some of the pits— it was the dissolving of most of these globules which gave the pyrite its cellular form. Massive pyrite was also found associated with pyrrhotite, chalcopyrite, and smoky quartz—all massive.

Pyrolusite: Very common as black dendrites on white feldspar. More dendrites were seen here than at any other quarry ever visited by the writer.

Pyrrhotite: See pyrite. Some of the pyrrhotite was in large lustrous masses.

Quartz var.Milky: Massive, as a constitutent of pegmatite.

Quartz, var.Rose: Mentioned by Foye as occurring at the small quarry.

Quartz, var.Smoky: Massive, light gray to deep black, as a constituent of pegmatite. One small gemmy mass was also found.

Sphalerite: Mentioned by Foye as occurring at the small quarry.

Torbernite: Very common as small emerald-green flakes on albite, microcline, muscovite and smoky quartz. It resembles autunite so closely that the easiest way to tell them apart is by the ultraviolet lamp. Autunite fluoresces, torbernite does not

Triphilite: May be present at the small pit as Foye stated that heterosite was its alteration.

Tourmaline: A few small lustrous crystals, broken unfortunately, were seen in pegmatite.

Uraninite: Mentioned by Foye as occurring at the small quarry. Schairer[5] states it occurs in large and perfect crystals.

Xenotime: Schairer[6] reports it as occurring in very perfect crystals in the pegmatite at the feldspar quarries of Glastonbury and Portland.

Zircon: Mentioned by Foye as occurring at the small quarry.

ACKNOWLEDGEMENT

The grateful thanks of the writer are extended to Messrs. George Wilkes, Foreman, of the Huse-Liberty Mica Co., plant in Middletown, to August Kuskey, Foreman of the Andrews Quarry, and to Drs. Peoples and Keppel of Wesleyan University (Middletown) for much valued information on Andrews Quarry, to Carl Klein of Hudson, N. Y., for the donation of many minerals from the locality, and especially to William Wilkes, Superintendent of Andrews Quarry for his hearty cooperation in allowing us the priviledge of examining the dumps and terrain of the locality and to hold the Annual Outing of the Rocks and Minerals Association (New York and New England groups) on Sundays, May 18, 1941.

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5 Schairer, J. F. Work cited, p. 69

6 Schairer, J. F. Work cited, p. 70

MINERAL FLUORESCENCE WITH THE GERMICIDAL LAMPS

By COLONEL JULIAN S. HATCHER

For fluorescent effects with minerals use is made of two distinct kinds of ultraviolet radiation—long wave or "near" ultraviolet and the short wave or "far" variety. Cheap and simple lamps for near U. V. have been available for some time, but until recently the devices for producing the shorter radiation have been rather complicated and expensive. The advent of the General Electric Germicidal Lamps has now changed this and made available a simple and effective source of the short wave ultraviolet at a reasonable price.

In order to show just where this new lamp fits in, a few words of explanation are desirable.

The effects produced by light or similar radiation depend almost entirely on the wave length. In speaking of the wave length of light it is customary to use as a unit a length of one ten millionth of a millimeter, called an Angstrom Unit, sometimes abbreviated to A. U.

Wave lengths longer than 7000 A. U. are not seen, but are felt as radiant heat, or Infra Red. Rays just shorter than 7000 A. U. are seen as red light, and as the wave length is shortened, we see successively, orange (about 6000), yellow, green (about 5000) blue, indigo (about 4500) and finally, violet. Wave lengths shorter than about 4000 A. U. are not seen, but are detected by the fluorescent effects they produce.

In addition to heat and visible light, the Sun's rays which reach the earth contain ultraviolet rays down to about 2800 A. U. Rays shorter than this are given off by the Sun, but are stopped by the atmosphere. Ordinary glass stops all rays shorter than about 3100 A. U.

The "near", (meaning nearest to the visible spectrum) or long wave, ultraviolet extends from the limit of visible violet (about 4000 A. U.), down to include all those waves which will pass through ordinary glass. Ultraviolet of this kind produces brilliant fluorescent effects in many minerals, such as Fluorite, Semi-Opal, Hyalite, Wernerite, Hackmanite, Sphalerite, and others; also in aspirin tablets, locust wood, oils, greases, some dyestuffs, and various other substances. The wave lengths around 3600 A. U. seem to be the most effective for material for this kind.

This near ultraviolet is produced by any substance which is heated to a very high temperature, such as the Sun, or the filament of a photo flood lamp; however, such sources also give off such intense visible light that all fluorescent effects are masked unless a filter is used which will shut out most of the visible light and at the same time allow some ultraviolet to pass.

Such a filter can be made from a dark purple Nickel-Cobalt glass. It will allow a certain amount of red and purple light to pass, but will shut out enough of the visible light to allow the fluorescent effects to be seen clearly.

Ultraviolet radiations of various kinds are also given off by an electric discharge through mercury vapor or argon gas; and an electric arc in air gives off ultraviolet of wave lengths which depend on the substances between which the arc is formed. The mercury vapor arc is rich in ultraviolet radiation of both long and short wave lengths; but the radiations actually leaving the apparatus are determined by the material of which the bulb or tube is made. If it is ordinary glass, the effect will be that of long wave, or near ultraviolet, for the glass will intercept all waves shorter than about 3200 A. U.; but if it is of fused quartz, waves as short as 1800 A. U. may be transmitted.

Two very inexpensive sources of near ultraviolet which are well adapted to mineralogical experiment with fluorescence are the Argon bulb costing 50c and the Purple X bulb costing $1.25. These bulbs are made by the General Electric Company and can be burned in an ordinary electric light socket; and the rays they give off are no more harmful to the skin or eyes than is ordinary sunlight which

contains an abundance of rays of the same kind.

The Argon bulb gives out so little visible light that the fluorescent effects can be seen without the aid of a filter. The Purple X, or "black bulb" is really just a photo flood lamp with a bulb made of red-purple filter glass. It causes brilliant fluorescence but lets through enough visible light to color the background a bright red purple, which causes false effects in some cases.

The Cooper Hewitt Mercury Vapor Lamp with a Nickel-Cobalt glass tube (The Ni-Co Lamp) and the General Electric B-H4 black bulb mercury vapor lamp are powerful sources of near ultraviolet in which the red effect is automatically eliminated by the fact that mercury vapor light contains very little red to start with. They are favorite sources of near ultraviolet where powerful effects are wanted. Their drawback for many amateurs is the cost of from $30 to $60 for lamp and special transformers. While the lamps mentioned above give excellent results with the Fluorites, Wernerites, Hyalites, etc., they have little or no effect on many of the most beautiful fluorescent minerals, such as Calcium-Larsenite, Scheelite, some types of Chalcedony, Sweetwater agates, Benitoite, and especially the red fluorescing calcites. These all seem to react best to a wave length around 2537 A. U.; and the usual source of such radiations is the cold quartz type of mercury vapor light, such as the R & M, the Mineralight, and others. Such lamps may be obtained with the necessary transformers for around $35.00 and up. For full effectiveness they must be used with a filter which will transmit waves shorter than 3000 A. U. The only such filter now available is the Corning Red Purple Corex A No. 986. It costs $1.00 for a 2-inch square, moulded to shape and not polished, or $1.75 for a 2-inch polished square.

Some time ago information was received from Dr. H. C. Dake, editor of The Mineralogist, to the effect that the New General Electric Germicidal Lamp was the answer to the experimenter's prayer for a simple and inexpensive short wave ultraviolet generator. An inquiry directed to the General Electric Company resulted in a very complete and courteous reply, to the effect that the standard 15 watt Germicidal lamp is almost identical in operation with the ordinary fluorescent daylight lamp, the only difference being in the fact that the tube is made of a very special glass that transmits the short waves, and the fluorescent coating inside the tube is omitted. The lamp is of the same size and shape as the ordinary fluorescent lamp; that is, 1 inch in diameter and 18 inches long, with two prongs on each end. It will work in any fixture adapted to the 15 watt fluorescent lamps. The lamp costs $5.75.

There are two other germicidal lamps; the 5 watt lamp, which costs $3.75 and can be used in any lamp socket on 60 cycle AC; and the 3 watt lamp costing $4.75, which is U-shaped, and fits a radio tube socket and requires a special coil to operate it. The 15-watt lamp is by far the most powerful, giving about 15 to 20 times the radiation of the 5-watt lamp, which is the weakest, and 5 times the radition of the 3-watt type. It may seem strange that the 3-watt lamp is more powerful than the 5-watt, but this is accounted for by the fact that the 5-watt lamp is made to operate directly off of a lamp socket with no auxiliary apparatus, hence loses efficiency. On a square centimeter at 1 meter distance, the 15-watt lamp gives an effective output in 2537 A. U. radiation of 25 to 30 micro-watts; the 3-watt lamp gives 3 to 4 micro-watts; while the 5-watt lamp gives only 1 micro-watt.

One of these 15-watt lamps was fitted into a fluorescent desk lamp fixture and placed in the fluorescent mineral cabinet which had already been equipped with Nico, Purple X, and cold quartz lamps. Even without filters, this gave very interesting effects. The Willemites and Hyalites showed up in brilliant greens and yellows, and the Scheelites showed a good blue, while Franklin calcite showed bright pink. Fluorite and Wernerite showed little or no effect.

The light was then fitted with a filter consisting of seven 2-inch moulded squares of Red Purple Corex A in a home-made holder 2 inches wide and 14 inches long. Good results were obtained, but it was concluded that the filters were

too thick, and were cutting off too much of the light, so they were lapped down to about a tenth of an inch in thickness and polished on both sides. No glass working apparatus was at hand, so they were worked down on the regular lapidary equipment that was on hand in the cellar, and no trouble was experienced. In order to get a good hold on the glass square, a vacuum suction cup, purchased from the Auto Supply Counter, was used, and the glass squares were lapped to thickness with carborundum grains on a cast iron lap, and were polished with tin oxide on the edge of a hard felt wheel.

With the polished filters and the 15-watt germicidal lamp, the results were almost exactly the same as those with the usual cold quartz lamp and filter. Excellent results were obtained on red fluorescing Franklin calcites, scheelite, benitoite, and all the other minerals requiring short wave lengths.

It should be noted that the radiation from these germicidal lamps will sunburn the skin and can inflame the eyes; but as the rays that do the damage will not pass through ordinary glass, a pair of plain glass spectacles will furnish sufficient protection.

A neighbor who borrowed this lamp to look at his Franklin minerals was warned to protect his eyes; but he decided that it would be all right if he merely held the fixture between himself and the bulb, and shone the light away from him. But he failed to remember that the ultraviolet is reflected back. He was so enthused with the effects that he used the lamp from 9 o'clock until after midnight and the next morning his eyes were so red that he had to wear smoked glasses for several days.

The cost of the germicidal lamp is $5.75 from any General Electric Supply branch; and a 15-watt fluorescent fixture suitable for use with it costs $3.89 at Montgomery Wards; thus the total cost is $9.64 without the filters. The seven 2-inch squares of Corex 986 added $7.00 to this, and the results were well worth it.

The 5-watt lamp, requiring no special fixtures or auxiliary equipment, is of course still less expensive, as it can be obtained ready to operate for $3.75. As now furnished by some mineral dealers, this lamp can be had fitted with a 2-inch square of Corex A filter. Owing to the low output of ultraviolet this lamp is not suitable for general cabinet illumination, as is the 15-watt size, but it can be used for the examination of individual specimens by holding it close to the sample.

THE WORLD'S ONLY SKELETON OF A GIANT PREHISTORIC TERROR BIRD

Mesembriornis, one of the terror birds that inhabited South America during 20,000,000 years of the Cenozoic Era (or Age of Mammals) has been restored at Field Museum of Natural History, Chicago, Ill., and was placed on exhibition November 29, 1940.

In an age when four-legged animals were predominant, Mesembriornis, standing five feet in height on its two legs, was a formidable fighting creature with carnivorous habits, great speed of locomotion, and terrific striking power. It met the mammals on their own ground, blitzkrieged them with its powerful feet, claws, and hooked beak, and then devoured them.

The mounted skeletal restoration of this giant bird is the first of its kind ever to be exhibited in any museum of the world. It shows that in size Mesembriornis was equal to ten or more of our largest modern eagles, and was without question one of the most spectacular of all birds either living or extinct. The museum display includes, in addition to the skeleton, a drawing, by John Conrad Hanson, showing what the creature must

have looked like with its full plumage in life.

Skeleton Found in Argentina

The restored skeleton is based upon two specimens collected in the province of Catamarca by the Second Marshall Field Paleontological Expedition to Argentina, under the leadership of Elmer S. Riggs, curator of paleontology. The work of assembling fragmentary parts and preparing a thoroughly articulated skeleton has required several years of effort by James H. Quinn of the museum's paleontological laboratories.

South American Fauna as Peculiar as that of Australia

According to Bryan Patterson, assistant curator of paleontology, Mesembriornis belonged to a group of extinct birds (the Phororhacidae) which was exclusively South American in distribution. Members of this family, and two related families, lived during the period from about 22,000,000 down to 2,000,000 years ago. Like the modern ostrich, Mesembriornis had wings obviously much too small for flight, but which were doubtless useful for balancing purposes while running. A trim narrow body, straight pelvis, and long powerful legs indicate that the bird was capable of running at great speed, and it may well have been as swift as the ostrich, which is credited with the ability to outdistance a galloping horse in a straight run. A bird of such size, ferocity, and speed was certainly a most formidable engine of destruction, states Mr. Patterson.

"So large and varied a group of flesh-eating birds as is presented by Mesembriornis and its relatives certainly preyed on a wide variety of animals from creatures of mouse size up to the largest herbivorous mammals," says Mr. Patterson. "That ground-living birds should have played so important a role in the economy of nature is most unusual. A comparable situation does not exist anywhere in the world today nor is it known to have existed in the past except in South America. The reason for its occurrence there is of extraordinary interest. Toward the end of the Age of Reptiles, South America became isolated from the rest of the world and remainded so until near the end of the Age of Mammals. As a result of this isolation, a fauna almost as peculiar as that of Australia developed. This fauna included no true carnivorous mammals. The place of these predators was partially taken by flesh-eating relatives of the opossum which evolved to fill this essential niche in the ecologic structure. Some of these forms became extraordinary similar to totally unrelated true carnivores living elsewhere. By far the most striking of them was the marsupial sabre-tooth Thylacosmilus which was amazingly like the sabre-toothed cats of North American and the Old World. Despite skin-deep similarities in appearance, however, these animals were no more efficient than inadequate substitutes usually are. They were evidently unable to dominate the predator field, and as a result the evolution of the phororhacoid birds became possible. The extinction of these birds shortly after coming into contact with the cats, dogs, and other Carnivora which entered South America after the reunion of that continent with North America in the Pliocene epoch, significantly suggests that they could never have arisen had they been faced with effective competition from the start

"The closest living relatives of Mesembriornis are the much smaller modern cariama and chuna of Brazil and Argentina, which today prey upon insects, small reptiles and mammals, and to some extent upon domestic fowl. Oddly enough, the cariamas can be domesticated, and in this condition are reported to act as guardians of the poultry they otherwise would prey upon."

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THE MINERAL DEALER

(Reprinted from W. Scott Lewis' *Mineral Bulletin,* Feb. 1941, page 3)

We sometimes wonder how many collectors fully realize the service that is performed by the mineral dealers. Hobbies are only interesting as long as we can derive some result from them. No one would be interested in collecting and studying minerals if unable to obtain new ones from time to time. The number of distinct froms which can be picked up by the average person during vacations and on week-end trips is decidedly limited. We have met a few people who said they were active collectors but only collected what they could get for themselves. After looking over their alleged collections we decided that they had told the truth. In most cases they had many boxes full of different forms of quartz and calcite mixed with assorted varieties of unnamed rocks, but there was very little of real mineralogical interest.

Some try to build their collections through exchanging with other collectors and this is fine as far as it goes, but it is not apt to go very far unless one is very fortunately situated. It is also a very slow process after one has acquired the most common minerals. The average collector does not have a large number of types to offer and in order to build much of a collection one must contact a large number of people in different parts of the country. This is a slow process and in many cases the material obtained proves to be quite impure and unsatisfactory.

The person who wants a first class collection will find it a great advantage to supplement his own finds and good exchanges with minerals obtained from well established and realiable dealers. The dealer who has been in business for many years has a great advantage over the beginner. He has gradually built up a great many contacts in this country and abroad. He handles minerals in such large quantities that he can afford to throw away the poor material and offer only the best. His judgement as to what constitutes a satisfactory specimen is better than that of the average exchanger whose knowledge of minerals is more limited. He can only continues in business by building a good reputation and by winning the respect of collectors throughout the ccuntry. He helps a multitude of rock hounds, prospectors and miners by paying them cash for their offerings or by exchanging minerals from other localities with them. In fact he puts mineral exchanging on an efficient basis by doing in a big way what the average collector does in a small and inefficient way. He advertises in the mineral magazines and thus makes their publication possible, as without commercial advertising they could scarcely hope to continue publication. He makes it possible for anyone to have fine specimens from all over the world which could not be obtained in any other way, thus arousing greater interest in the hobby. In fact one wonders how much interest there would be in mineral collecting today if there had been no dealers to push it. We would certainly lack the splendid magazines like the *Mineralogist* and *Rocks and Minerals* which are doing so much to arouse interest and to educate the beginners. Without the magazines there would never have been the growth of clubs and federations that mean so much to the mineral collecting fraternity. Instead of hundreds and perhaps thousands of worth-while collections we would have a small number of people collecting beach pebbles and different forms of common minerals such as quartz and calcite. Of course there would always be a small number of real students who would manage to build fine collections, but this would be done under difficulties which would discourage the average person whose interest had not been fully aroused.

What does the dealer get out of all of this? Sometimes we ask that question ourselves. We work from early in the morning until late at night during the busy season. We never spend a cent on movies, dances, whiskey or cigarettes. Our only dissipation is getting out on the desert or up in the mountains for a few

(*Continued on page* 179)

NEW ENGLAND NOTES

Conducted by RUDOLF C. B. BARTSCH
36 Harrison St., Brookline, Mass.

Early spring visits to some localities resulted in the addition of many fine specimens to our collection.

Amherst, Mass. A recent visit to the Lane Trap Rock Quarry at Amherst Notch proved worth while. No blasting has as yet been done but the ice and frost had done a very good job in bringing down a large amount of very interesting material. Large blocks from the calcite veins had been dislodged and in breaking them open we secured excellent specimens of calcite crystals in many forms, groups of datolite crystals, quartz crystals, fine colored amethyst crystal groups, prehnite crystals, and some fine platy white barite.

Portland, Conn. A trip to the Schoonmaker Mine at this locality was also made. Material to a depth of about 6 feet has been added to the dump on the southerly side. This material contains much interesting minerals. Lepidolite is abundant, spodumene (altered to pinite) is plentiful in shades of green and brown, tourmalines of green colors are to be had in groups with muscovite—these tourmalines are of the "watermelon" type, light green on the outer edge to deep green in the core or center. The most interesting specimen secured was a group of three amblygonite crystals having many fine faces. Amblygonite crystals with definite faces are very rare as the crystals usually are very coarse without definite form.

Oneco, Conn. A stop was also made at the granite quarry in this village. A great many pegmatite veins cut the granite in all directions. These veins contain quartz, orthoclase, mirocline, magnetite, muscovite, epidote, apatite, and calcite. An interesting cavity containing quartz crystals with fine muscovite crystals was secured. The apatite occurs in white gemmy elongated crystals and are very striking in their brilliant appearance in the pegmatite. The magnetite is found in masses of grains and also as striated octahedrons (individual crystals). Epidote was seen only as a drusy crystal crust.

Bolton, Mass. The owner of the lime quarry here is now charging 50c admission to this famous locality. No blasting has been done here since last fall so there is little to be found except scapolite, forsterite, and some vermiculite.

Newbury, Mass. The Chipman Mine was the first place visited this season and there were still several inches of snow on most of the old dumps. However, while working over the bare spots, I secured the first crystals of sphalerite to be recorded from this locality. The crystals occur in a cavity, implanted on quartz crystals, and are very perfectly formed of a greenish color. There are still lots of the usual galena, pyrite, chalcopyrite, and siderite. Occasionally some bornite is also found.

Cumberland, R. I. A recent visit to the famous old locality on Diamond Hill resulted in the finding of some fine quartz specimens. The quarry itself is posted but the collector can take the make-shift road to the left as the base of the ledge is approached, and he can go nearly to the top. Much material has been loosened by the frost and many fine specimens of quartz in all sorts of groups from the finest druses up to crystals an inch in diameter and from pure opaque white to various grades of transparency. Many groups are beautifully colored by limonite and hematite. Very good specimens of agate and onyx may be found in loosened boulders along the road. Many of the cavities in the agate are lined with all sorts of drusy quartz crystals, some showing two distinct growths and a few doubly terminated crystals.

West Roxbury, Mass. A check-up trip to this locality resulted in the finding of two groups of nice pink dolomite crystals on quartz crystals in a vein of asbestos.

Club and Society Notes

Mineralogical Society of Arizona

In March the Mineralogical Society of Arizona held two meetings, the first on the 6th and the second on the 20th. At the first meeting, Mr. Henry F. Obermanns, Vice-President of the Hammermill Paper Co., Erie, Penn., spoke on paper making and showed several reels of moving pictures of the processes. He especially emphasized the use of minerals in the making of paper. Primitive writing was on rock and one can still see many pictographs in the Southwest. Later clay was used. Today in paper making sulphur, calcite, dolomite, kaolin, talc, and bentonite are among the minerals used in processing the cellulose to get finished paper.

The second meeting was devoted to business and the display of specimens. Mr. Ben Humphreys displayed a fine specimen of leaf gold in quartz; Mr. E. P. Matteson showed specimens of leucanite, a gem material from a recent find in New Mexico; Mr. Obermanns displayed several interesting specimens of quartz crystals from near Congress Junction. These crystals showed phantoms, some were doubly terminated and joined to form crosses. Good specimens of limonite, pseudomorphs after pyrite, both cubes and pyritohedrons, were found in the same area. The Society plans a field trip to this area in the near future.

On March 23rd, a field trip was made to the Dixie Mine—Fourth of July Butte geode areas. Some very good specimens of clam shell geodes and sagenitic agate geodes were found.

The Society is making up a file of interesting collecting localities in Arizona and directions for reaching them. Visitors are welcome to our meetings which are held on the first and third Thursdays of each month and we shall be glad to assist them in planning interesting collecting trips.

Geo. G. McKhann, Sec.Treas.

Plainfield Mineralogical Society

A regular meeting of the Society will be held on Tuesday, May 6, at 8:00 p.m., in the Plainfield Public Library, Plainfield, N. J. The speaker for the evening will be Mr. Ernest Weidhaas, of Pelham Manor, N. Y., whose topic will be "Mineral Freaks and Oddities." Mr. A. Northup, a member of the Society, will speak on "Cleaning Mineral Specimens."

On Saturday, May 17, a field trip will be made to Mts. Adam and Eve in Orange County, New York.

Junior Mineral League

The Junior Mineral League of the Morgan Park Junior College, Chicago, Ill., a group of mineral minded students affiliated with the Rocks and Minerals Association, put on a exhibit, in connection with the conference of the National Association of Junior Colleges at Chicago February 27 and 28, that attracted much attention and favorable comment. The exhibit was on display in the Stevens Hotel and occupied fifty square feet of table room. Over five hundred gems, minerals, rocks and other geological specimens were on display and more than a thousand persons inspected the collection and expressed their surprise and pleasure at what they viewed. Among the visitors, the League members, who had the exhibit in charge, were delighted to meet Mr. G. W. Scott of the Scott family of rose quartz fame. Mr. Scott was very appreciative of the League's efforts and arranged for an exchange of specimens. The Junior Mineral League is a young organization but is wide awake and feels that it did a good piece of work in showing what can be done by a students' organization in the study and appreciation of minerals.

Mineralogical Club of Hartford

At the Annual Meeting of the Club, held on March 12, the present officers were reelected for another year. They are President, Harold P. Crosby; Vice-President, Ralph F. Hills; Secretary, Mrs. L. T. Goodrich; Treasurer, Fred W. Webster.

The Schortmann Brothers of Easthampton, Mass., attended the meeting and put on a beautiful display of fluorescent and phosphorescent minerals.

Connecticut Valley Mineral Club

The second meeting of the newly formed Connecticut Valley Mineral Club was held at the Springfield Museum of Natural History, Springfield, Mass., on Thursday, April 3rd, 1941. At this meeting it was unanimously voted that the club be affiliated with the Rocks and Minerals Association.

Leo D. Otis, Sec.-Treas.

BIBLIOGRAPHICAL NOTES

Prospecting for Gold, by Ion L. Idriess.

For those amateurs who may like to hunt for gold here is a book that was prepared especially for you by an experienced prospector and written in very simple language. Its very first chapter "The likeliest country to try" is an indication how carefully the author has prepared the text of this very interesting and very important book.

The author starts off by listing the various articles necessary to make up a prospector's equipment. Then he takes one afield over hills and mountains, through valleys and stream beds calling attention to certain clues which might lead to gold. Once gold is found he does not leave you stranded but proceeds to tell in simple language, often assisted with good drawings, how to work the deposit, how to bring water to your mine from some distant source, and how to make some of the necessary home-made apparatus for extracting the gold from its accompanying rock or sand.

The book is not devoted entirely to gold as it contains chapters on prospecting for osmiridium, platinum, and oil as well as on opal mining.

It is a pleasure to recommend this book which was written by a very popular Australian writer who is author of a number of books on various subjects.

Prospecting for Gold is now is its 7th edition. It contains 293 pages, 24 illus., is 5x7½ inches in size and its price is only 5 shillings ($1.25).

Published by Angus & Robertson, Ltd., 89-95 Castlereagh St., Sydney, N. S. W., Australia.

New Hampshire Minerals and Mines, by T. R. Meyers.

It is always a pleasure and a privilege to announce the appearance of a bulletin that is devoted to the minerals and their localities of a state because it is a sign of intense interest in the minerals of that state. New Hampshire has always been very popular with summer vacationists—it has always been very popular with mineral collectors, too. To a mineral collector, small communities of the state like Acworth, Alstead, Grafton or Westmoreland, are more well known and of greater interest than are Manchester, Dover, or even the White Mountains.

Prof. Meyers' very timely and very important bulletin on the minerals and their localities of New Hampshire is, therefore, of special interest to collectors and we extend our congratulations to the author and to the New Hampshire State Planning & Development Commission for its appearance. We do not have to wish the bulletin a large circulation—we only hope that enough copies have been printed to go around. Wher collectors hear of the bulletin and learn of the large 14x26-inch map that goes with it showing townships, counties, and 162 localities (printed in red and numbered)—we know that orders for the bulletin will pour in. To our knowledge this is the first time that a bulletin on mineral localities has ever been printed in which a map showing the location of the localities also appears.

The bulletin is divided into sections as follows: Preface, p. 3; Introduction, p. 5; New Hampshire Minerals (alphabetical list), pp. 7-37; Distribution of New Hampshire Minerals by Towns or Regions (localities listed alphabetically), pp. 38-41; New Hampshire Mines, p. 42; Bibliography, pp. 43-48; Further Information on the Geology of the State, p. 49. Large map in pocket.

The report (6x9.49 pp., paper cover) is published by the New Hampshire State Planning & Development Commission, Concord, N. H.

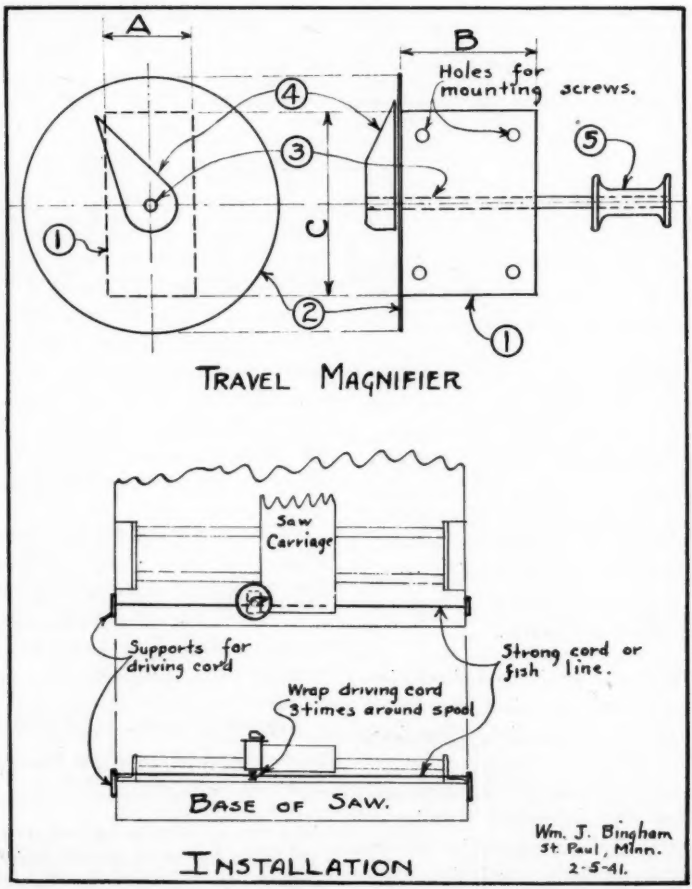
LAPIDARY KINKS

Travel Magnifier for Diamond Saw Carriage

By WILLIAM J. BINGHAM

Due to the fact that the saw carriage on a diamond saw travels quite slowly, it is difficult to judge when the saw is traveling too fast or too slow. The pointer of an indicator such as shown on the sketch will travel many times as fast as the carriage and the speed can then be judged with reasonable accuracy.

This gadget is very simple and can be attached to any type of saw where the carriage is not covered up. On the covered type and swinging-arm types, the cord can be attached to the arm or carriage, running it over spool "5" and then to a small weight hanging free.



It consists of a hardwood block "1", the dimensions A, B, & C should be made to suit your own saw. B should be a minimum of about 1½ inches to provide a bearing of sufficient length so that shaft "3" will not wabble. "2" is an old radio dial or two 5 & 10c store protractors. "3" is a shaft made from a heavy wire or any round rod less than ¼ inch diameter. The block "1" should be drilled a free running fit for this shaft. "4" is a pointer that can be made from wood or plastic and is driven onto the shaft "3". "5" is the driving spool which can be of wood or plastic and is also driven onto the shaft. If this spool is made 5/16" inch diameter, the pointer will make one complete revolution for each inch of carriage travel.

No dimensions are given because most saws are different and what would fit one would not fit another.

COLLECTOR'S KINKS

Collectors are cordially invited to submit notes from their experiences and so make this department of interest to all.

A DIGGING TOOL

Arthur H. Jones, of Brooklyn, N. Y., who has collected an unusually large lot of choice minerals on mine and quarry dumps, recently revealed the secret of his amazing success. Realizing that many loose crystals and good specimens in general are often buried in the "sand" and the small broken masses on the dumps, he has added to his collecting equipment a potatoe hook (obtainable at hardware stores). This hook has five prongs and a long handle but for ease in operation Mr. Jones has cut off the two outside prongs and shortened the handle to 30 inches. With this tool he is able to dig with ease into the dumps and thus uncover many good specimens that are buried.

Collectors, you better add this tool to your equipment!

SHOES FOR COLLECTORS

How many times have collectors slipped and skidded on slippery rocks! More times than some would care to count. M. D. Bogart, of Wellesley, Mass., has obtained a pair of shoes which should be good news to collectors. "They are the safest, non-slip shoes for mineral collectors I have yet seen," he reports. "I swear by them."

The shoes are called "Pan-Cord" (trade name), also "Cord on End." They are made of rubber and fabric, like a cord auto tire, and cost only $3 a pair.

THE MINERAL DEALER

(*Continued from page* 174)

days of nature study at rare intervals. Up to date we have managed to live and to pay our taxes, but the only person who thinks we are getting rich also believes all the patent medicine ads and thinks Hitler wears a halo.

Editor's Note: We seldom reprint articles from other publications but Mr. Lewis' item on the mineral dealer is so timely and to the point that it deserves wider publicity.

Clubs Affiliated With the Rocks and Minerals Association

ARIZONA

Mineralogical Society of Arizona
Geo. G. McKhann, Sec., 909 E. Willetta Street, Phoenix.
Meets at the Arizona Museum in Phoenix on the 1st and 3rd Thursday of each month.

CALIFORNIA

East Bay Mineral Society
Miss Marjory Welch, Sec., 3268 Central Avenue, Alameda.
Meets on the 1st and 3rd Thursdays of each month (except July and August), at 8:00 p.m., in the Lincoln School Auditorium, 11th and Jackson Sts., Oakland.

Northern California Mineral Society
A. L Rogers, Sec, 137½ Joost Ave, San Francisco
Meets on the 3rd Wednesday of the month at the Public Library in San Francisco.

Southwest Mineralogists
Mrs. Pearle Arnold, Cor. Sec., 2132 W. 76th St., Los Angeles.
Meets every Friday at 8:00 p.m. at Manchester Playground, 88th and Hoover Sts., Los Angeles.

COLORADO

Canon City Geology Club
F. C. Kessler, Sec., 1020 Macon Ave., Canon City.
Meets on the 1st and 2nd Saturdays of each month at 9:00 a.m. in the High School Building, Canon City.

Colorado Springs Mineralogical Society
Lynn M. Hopple, Sec.-Treas., Motor Route 2, Colorado Springs.

CONNECTICUT

Bridgeport Mineral Club
Mrs. Julia Walker, Sec., 55 Eaton Street, Bridgeport.
Meets in the Bridgeport Public Library on the 3rd Monday of the month.

Long Hill Mineral Club
Eugene F. Robinson, Sec., R. R. D. No. 4, Box 237, Bridgeport.
Meets on the 4th Tuesday of each month at 8:00 p.m., in the Hawley Memorial Library, Long Hill.

Mineralogical Club of Hartford
Mrs. L. T. Goodrich, Sec., 51 Jerome Avenue, Bloomfield.
Meets the 2nd Wednesday of each month, at 8:00 p.m., at 249 High St., Hartford.

New Haven Mineral Club
Mrs. Lillian M. Otersen, Sec., 16 Grove Place, West Haven.
Meets on the 2nd Monday of the month at the Y. W. C. A. on Howe St., New Haven.

ILLINOIS

Junior Mineral League
E. Johansen, Sec., Morgan Park Junior College, 2153 W. 111th St., Chicago.

MAINE

Maine Mineralogical and Geological Society
Miss Jessie L. Beach, Sec., 6 Allen Avenue, Portland.
Meets last Friday of the month at 8 p.m., at the Northeastern Business College, 97 Danforth Street, Portland.

MARYLAND

Natural History Society of Maryland
2103 N. Bolton Street, Baltimore.
Office hours, Tuesdays and Fridays, 10:00 a.m. to 5:00 p.m.

MISSOURI

National Geologist Club
Mrs. D. P. Stockwell, Pres., Mt. Olympus, Kimmswick.

NEVADA

Reno Rocks and Minerals Study Club
Mrs. Rader L. Thompson, Sec., R. F. D. 1, Box 225-A, Reno.
Meets on the 1st Wednesday of each month, at 7:30 p.m., at the Mackay School of Mines, Reno.

Western Nevada Mineral Society
A. Cornely, Sec.-Treas., P. O. Box 21764, Reno.

NEW JERSEY

Newark Mineralogical Society
William E. Simpson, Sec., 308 Grove Street, Montclair.
Meets on the 2nd Sunday of the month at 3 p.m. at Junior Hall, corner Orange and North 6th Streets, Newark.

Plainfield Mineralogical Society
Joseph D'Agostino, Sec.-Treas., 711 Sheridan Avenue, Plainfield.
Meets on the 1st Tuesday of the month at 8 p.m. at the Plainfield Public Library.

NEW MEXICO

New Mexico Mineral Society
R. M. Burnet, Sec.-Trea., Carlsbad.

Society of Archaelogy, History and Art
Carlsbad.

NEW YORK

Chislers, The
Miss Evelyn Waite, Sponsor, 242 Scarsdale Road, Crestwood, Tuckahoe.
Meets bi-monthly at members' homes.

Queens Mineral Society
Mrs. Edward J. Marcin, Sec., 46-30—190th Street, Flushing.
Meets on the 2nd Thursday of the month at 8 p.m. at 289 Etna Street, Brooklyn.

OKLAHOMA

Oklahoma Society of Earth Sciences
W. P. Smiley, Sec.-Treas., 229 W. Jefferson Street, Mangum.
Meets on the 2nd Tuesday of each month, at 7:30 p.m., at the Historical Museum, Mangum.

PENNSYLVANIA

Thomas Rock and Mineral Club
Mrs. W. Hersey Thomas, Pres., 145 East Gorgas Lane, Mt. Airy, Philadelphia.
Meets on the 3rd Friday of each month, at 8:00 p.m., at the home of its president, Mrs. Thomas.

VERMONT

Mineralogical Society of Springfield
Victor T. Johnson, Sec., 11 Elm Terrace, Springfield.
Meets on the 3rd Wednesday of each month at 8:00 p.m. at the homes of members.

WASHINGTON

Gem Collectors Club
Mrs. Lloyd L. Roberson, Sec., 522 North 70th Street, Seattle.
Meets on the 1st and 3rd Tuesdays of each month (except during the summer) at 8:00 p.m. at the Y. M. C. A.

Washington Agate and Mineral Society
Monroe Burnett, Sec., 802 S. Central St., Olympia.
Meets on the 1st Monday of the month, at 7:30 p.m. at the home of some member.

. . Collectors' Tales . .

By PETER ZODAC

A MINERALOGICAL RAILROAD

This is the story about a railroad line up in the mountains of Western North Carolina as told to a northern collector by J. T. Walden of Statesville, N. C. Unfortunately it cannot be told in the dialect heard nor under the same circumstances.

On a very cold and rainy January 2nd of this year, we left Statesville early in the morning with Mr. Walden as guide. We made two stops, one at an abandoned corundum mine and the other in an open field where excellent zircons were found. By this time we were wet and cold and we slithered out from a dirt road onto a macadam highway running parallel with a single track railroad. The place was Loray, about two miles south of the little town of Hiddenite. We stopped at a gas station where Mr. Walden soon became acquainted with the owner who had lived there all his life (Mr. Walden, himself, was born not far away at Stony Point). All these towns are in Alexander County.

While we were munching some crackers and drinking Coca-Cola, an ancient engine with two old coaches and several freight cars chugged by. In the time tables this branch road is known as the Charlotte-Statesville-Taylorville Division. From Charlotte to Statesville, it follows a main line route but from Statesville on there seems to be little reason for its existance. As a matter of fact there is but one train and it manages to make a round trip a day, the distance being 67 miles one way. No one in the area apparently knows the correct name for the railroad; to them all it is the *June Bug Railroad*.

It is at this point that we wish you could have heard Mr. Walden tell the story. First he asked if anyone had ever heard of Congressman Linney and on being answered in the negative proceeded to tell what a wonderful orator their local representative had been. Everyone in the County seemed to be tremendously proud of the Honorable Mr. Linney and grateful for this efforts in their behalf. It was he who had the railroad started. In the course of a long speech before the legislature on the needs of the county for a railroad, he said: "Why, Gentlemen, up there in Alexander County we have precious stones so valuable that a June bug can carry a fortune on its back." The railroad was built and to this day it bears the name, the *June Bug Railroad*.

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BOOKS

Handbook For the Amateur Lapidary by J. H. Howard, 16 chapters covering all phases of gem cutting and polishing, 141 pp., 44 illus., price $2.00. J. H. Howard, 504 Crescent Ave., Dept. R., Greenville, S. C.

How to Collect Minerals. By Peter Zodac. A guide book for the collector, 80 pp., 15 ills., $1.00. Rocks and Minerals, Peekskill, N. Y.

Fifty Back Numbers of Rocks and Minerals Magazine, all in good condition and all different, $10.00. If you have back numbers send a list of them with your order and we will try not to duplicate any of them. Rocks and Minerals, Peekskill, N. Y.

History and Geology of the Royal Gorge, an illustrated souvenir booklet with maps and drawings locating 54 minerals for touring collectors. 50c postpaid. F. C. Kessler, Canon City, Colo.

FOSSILS

Fossils, Minerals, Old Arms, Indian Beaded Trappings, prehistoric specimens, general line of curios. Lists 10 cents. N. E. Carter, Elkhorn, Wisc.

EXCHANGES

I WANT TO EXCHANGE MINERALS. CAN OFfer fayalite, forsterite, thorite, triphyllite, heterosite, manganapatite for good specimens from other localities. Gunnar Bjareby, 147 Worthington St., Boston, Mass.

LAPIDARY SERVICE & SUPPLIES

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Scott Rose Quartz Co.—Rose Quartz, Black Hills specimens, all kinds and colors; for rock gardens, cabinets, etc. Boxes: 24 specimens, $1.00; 18 specimens, 50c; 15 specimens, 35c. Postage paid. Box 516, Custer, S. Dak. Send stamp for price list.

Fluorescent calcite mixed with sphalerite and galena. I have been mining specimens for ten years and this is the only calcite I have found which will fluoresce under the black bulb or quartz light and only a small quantity available. For sale or trade for good willemite or wernerite. J. A. Robertson, Box 105, Baxter Springs, Kansas.

Loose, almandite garnet crystals of good quality from Redding Glen, Conn. 10 for $1.00. F. L. Noy, Easton, Conn.

Minerals, Fossils, Indian Relics, Books, Coins, Curios, Stamps. Old Glass. Catalogue 5c. Indian Museum, Osborne, Kansas.

Uvarovite—Choice specimens. Minute brilliant emerald-green crystals coating ore. For details write: H. Goudey, Jamestown, Calif.

New England minerals for sale or exchange. Correspondence solicited. Rudolf C. B. Bartsch, 36 Harrison St., Brookline, Mass.

Mineral Specimen Cabinets—15 to 100 specimens. Prices 35c to $10.00. Cabinet specimens—free price list. Charles O. Scott, 739 Colorado Ave., Trinidad, Colorado.

Arizona Minerals for sale and exchange. Luther Steward, Phoenix, Arizona.

PYROMORPHITE—Green xls encrusting quartz. 10c to $1.00. Dekro Mineral Company, 7029 Lincoln Drive, Philadelphia, Pennsylvania.

SPECTROSCOPES

Spectroscope For Quick Ore Analysis $2.50. Cuffing Sons, Campbell, Calif.

MISCELLANEOUS

Mounted Steer Horns For Sale. Seven feet spread. Free photo. Lee Bertillion, Mineola, Texas.

Highest Prices Paid for Gold and plated broken and discarded jewelry, spectacles, watches, gold teeth odds and ends, etc. Remittance sent promptly. B. Lowe, Box 525, Chicago, Ill.

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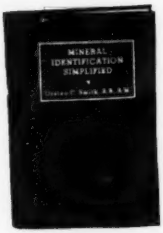

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9TH NATIONAL OUTING
of the
ROCKS and MINERALS ASSOCIATION
Sunday, May 18, 1941

Again the time is approaching for the Annual Outing of the Rocks and Minerals Association and we hope that more field trips will be held this year with larger groups participating then ever before. The outing is held to stimulate interest in mineral collecting. It is also the period when many amateurs are introduced to their first visit to a mineral locality. Aside from collecting minerals, the outing gives one the opportunity to meet old friends and in making new ones.

As in previous years, the Association extends a cordial invitation to all readers of ROCKS AND MINERALS, and to the general public, to participate in its National Outing.

If an outing is held in your area, it is suggested that you register at an early date with the director and if an answer to your letter is desired, enclose a self-addressed stamped envelope. If no outing is to be held in your area then hold one of your own, inviting some friends to join you.

If those having cars could accommodate one or more extra passengers, it would be considered a great favor if they would so inform their directors.

Collectors should wear stout shoes and old clothes and be provided with mineral hammer, collecting bag, small note book, pencil, magnifying glass, pen knife, and newspapers (for wrapping specimens). Also bring lunch.

NOTE: Please be careful around mines and quarries. Neither the Association nor the directors nor even the owners of property on which outings may be held will be responsible for any accidents incurred by those participating.

Do not touch any of the equipment nor do any damage to the property.

The states in which outings will be held are as follows:

CONNECTICUT

(Bridgeport Branch)

Director: James R. McKeen. 924 Broad St., Stratford

Locality: Andrews Pegmatite Quarry near Portland, Conn.

Meeting Place: Will start from the Central High School, Bridgeport, at 9:30 a.m.

Note: This is a joint outing with the New York group.

(Hartford Branch)

Director: Geo. P. Robinson, 16 Simpson St., Hartford.

Locality: Gillette Quarry, Haddam Conn.

Meeting Place: At the quarry.

Note: This outing is sponsored by the *Mineralogical Club of Hartford.*

(New Haven Branch)

Director: Mrs. Lillian Otersen, 16 Grove Place, West Haven.

Locality: Upper Merryall quarry near New Milford, Conn.

Meeting Place: In front of the Peabody Museum on Whitney Ave., New Haven, Conn., at 9:00 a.m. D. S. T.

Note: This outing is sponsored by the New Haven Mineral Club.